# Steel & Iron Structures

MADE · AND
ERECTED BY

## ANDREW HANDYSIDE & Co LTD,

## DERBY & LONDON.

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H W Clark.

June 16/09

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# THE BRITANNIA IRON WORKS, DERBY,

Were established at the beginning of the last century, at first as an Iron Foundry, and were soon known for the superior quality of what were called "Derby Castings." In 1861, A. Handyside & Co., then a private firm, commenced the manufacture of structural ironwork, and since that date the firm has been concerned in many of the important works in the Country. The business was taken over by the present Limited Company in 1873. The Works are situated in the centre of the Midland Iron, Steel, and Coal Districts, about equally distant from the Ports of London, Liverpool, and Hull.

## Delivery.

The Midland and Great Northern Railways adjoin the Works, and are connected with them by means of sidings, so that the finished Ironwork can be loaded directly on the Railway trucks. With every facility for materials, fuel, labour, and transport, Andrew Handyside & Co., Ltd., have been engaged for many years in the manufacture and erection in Great Britain and abroad of important works of the character indicated by the illustrations in this book.

## Erection.

Having a staff of Engineers and Foremen accustomed to the Bridging of Rivers, with the various incidents of Cylinder, Screw-Pile, and other Pier Foundations, as well as the lifting of heavy Girders and Roofwork, they are prepared to tender for and undertake the supply and erection, at home and in foreign countries, of Iron and Steel Structures of every kind.

## Works.

The Works have been greatly improved and extended since 1900. Modern machine tools, transporters, and cranes, allow the quick handling of work in progress, and a central power-generating station with electric transmission economises time and labour.

**The Manufacture and erection of Steel and Iron Structures** has not been confined to the heavier class of work, such as large Railway Bridges and Stations, or Exhibition Buildings, but comprises also such work as enclosed Markets, Winter Gardens, Drill Halls, and Conservatories. Besides Structures as just described, still more ornamental work, such as Fountains, Vases, Gates, Railings, in Cast or Wrought Iron, Lamp Pillars, and other work of the more decorative class are constantly being made, the numerous designs and patterns available being described and illustrated in several classified Catalogues.

**Andrew Handyside & Co.** are continually making Steel and Iron Structures of every description for the Colonies and Foreign Countries, and have by their own Engineers and Foremen erected Bridges and other Structures in Russia, Austria, Spain, Portugal, Denmark, Italy, Sardinia, Canada, Australia, South America, and Africa.

**Andrew Handyside & Co.** can refer with confidence to the Engineers of the principal Railways in Great Britain and Ireland, under whom they are carrying out important Works at the date of publication, as well as to the Municipal Engineers and principal Architects of many of the leading Cities in Great Britain.

**The following Photographic Reproductions illustrate a few of the many Structures made and erected by Andrew Handyside & Co., Limited, between 1884 and 1903.**

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# Bridges.

Engineer in Chief for Public Works, New South Wales—C. W. Darley, Esq., M.I.C.E.

## Glebe Island Bridge, Swing Span.

Total length - - 193 feet.
Total clear width, 50 feet { Roadway - 40 feet. 2 footways, each 5 ft. wide.
Diameter of Roller Track and Drum, 35 feet.

## Sydney Harbour, New South Wales.

Total weight - - - 490 tons.
Height from underside of Roller Path to top of Parapet - 29 ft. 6 ins.
Electrical and Hand Gears for operating Swinging and End Lift Apparatus.

Engineer in Chief—RICHARD JOHNSON, Esq., M. Inst. C.E., London.

## Great Northern Railway.

Carrying Main Line over
Newark Dyke.

## Newark Dyke Bridge.

| | | | |
|---|---|---|---|
| Span | - | - | 259 feet. |
| Weight | - | - | 762 tons. |

CLAUDE W. KINDER, Esq., M. Inst. C.E., Engineer in Chief, Tientsien.
SIR BENJAMIN BAKER, K.C.M.G., Consulting Engineer, London.

## Chinese Imperial Railway.

5 spans of 200 feet.
10 „ „ 100 feet.

## Bridge over Lan Ho River.

Length - - 2,000 feet.
Weight - - 1,140 tons.

Engineer—A. O. SCHENK, Esq., M. Inst. C.E., Swansea.

## Swansea Harbour Trust.

| | |
|---|---|
| Swing Span | 164 feet. |
| Shore Span | 74 feet. |
| Total Length | 238 feet. |

## Swing Bridge, Swansea.

| | |
|---|---|
| Weight of Steelwork | 527 tons. |
| Weight of Cast Ironwork | 426 tons. |
| Total Weight | 953 tons. |

Engineer in Chief—Sir E. Leader Williams, M. Inst. C.E.

## Manchester Ship Canal.

| | |
|---|---|
| Length of Bridge - - | 192 feet. |
| Depth of Structure - - | 33 feet. |

## Aqueduct at Barton.

(Carrying Bridgewater Canal over Ship Canal.)

| | |
|---|---|
| Width of Waterway - - | 33 feet. |
| Weight of Swing Bridge - | 696 tons. |
| Weight of Gates - - | 148 tons. |

Engineer in Chief—Sir E. Leader Williams, M. Inst. C.E.

## Manchester Ship Canal.

| | |
|---|---|
| Central Span - - | 206 feet. |
| Width of Roadway - - | 18 feet. |

## Road Bridge at Warburton.

| | |
|---|---|
| Total length - - - | 322 feet. |
| Weight - - - | 780 tons. |

Engineers—Sir JOHN FOWLER, Bart., K.C.M.G , M. Inst. C.E. MURDOCH PATERSON, Esq., M. Inst. C.E., Inverness.

## Highland Railway.

| | | |
|---|---|---|
| Seven Spans | - - | 130 feet each. |
| Two Spans | - - | 125 feet each. |

## Findhorn Viaduct.

| | | |
|---|---|---|
| Total length | - - | 1,160 feet. |
| Weight of Metal Work | | 1,730 tons. |

Engineer in Chief F. STEVENSON, Esq., M.I.C.E., London.

## L. & N. W. Railway.

Three Spans - - 110 feet each.
Double Track.

## Bridge over River Dee.

Weight, Cast Iron - - 40 tons.
,, Steelwork - - 768 tons.

Engineers—J. A. McDonald, Esq., M. Inst. C.E., and Richard Johnson, Esq., M. Inst. C.E.

## Midland & G. N. Joint Railways.

| | | |
|---|---|---|
| Swing Span | - - | 180 feet long. |
| Two fixed Spans | - - | 127 feet long. |
| Total Length | - - | 307 feet. |

## Swing Bridge, Sutton Bridge.

| | | |
|---|---|---|
| Steelwork | - - - | 965 tons. |
| Cast Cylinders | - - | 814 tons. |
| Total Weight | - - - | 1,779 tons. |

Engineer—William Shelford, Esq., M. Inst. C.E., London.

## Hull & Barnsley Railway.

## Swing Bridge over River Ouse.

Swinging Span - - 250 feet long.

Weight - - - - 510 tons.

**This Bridge is completed by two Shore Spans (not shewn in picture) each 80 feet long—total length of Bridge being 410 feet; the total weight being—Cylinder Piers and Turntables, 1,093 tons; Shore Spans, 177 tons; Swinging Span, 510 tons.**

Engineer J. C. Bretland, Esq. M. Inst. C.E., City Engineer, Belfast.

## Corporation of Belfast.

## Bridge over River Lagan.

| | | | |
|---|---|---|---|
| Three Spans each | - - | 92 feet. | |
| Width of Roadway | - - | 60 feet. | |
| Total length | - - | 275 feet. | |
| Weight | - - - | 870 tons. | |

Engineer—Wm. Harpur, Esq., M. Inst. C.E., Borough Engineer, Cardiff.

## Corporation of Cardiff.

Length of Swing Span - - 186 feet.
Two Side Spans - - each 131 feet.
Steel Caissons under piers.

## Clarence Swing Bridge.

Total length - - - 448 feet.
Total weight - - - 780 tons.

Engineer—J. Chaloner Smith, Esq., M. Inst. C.E., Dublin.

## City of Dublin Junction Rlys.

| | |
|---|---|
| Length of Central Span - - | 97 feet. |
| Width - - - - | 29 feet. |

## Amiens St. Bridge.

| | |
|---|---|
| Total length - - - | 171 feet. |
| Weight - - - | 415 tons. |

Engineer -Sir BENJAMIN BAKER, M. Inst. C.E., London.

## Cape Colony Government.

Central Span - - 420 feet.
Two Side Spans - - 140 feet each.

## Gouritz River Bridge.

Height above River Bed - - 210 feet.
Weight - - - - 1,000 tons.

# Roofs

Engineers—Messrs. Livesey, Son & Henderson, London.

## Central Uruguay Railway.

Weight - - 650 tons.

## Monte Video Station.

Length - - 394 feet.
Span - - 156 feet.

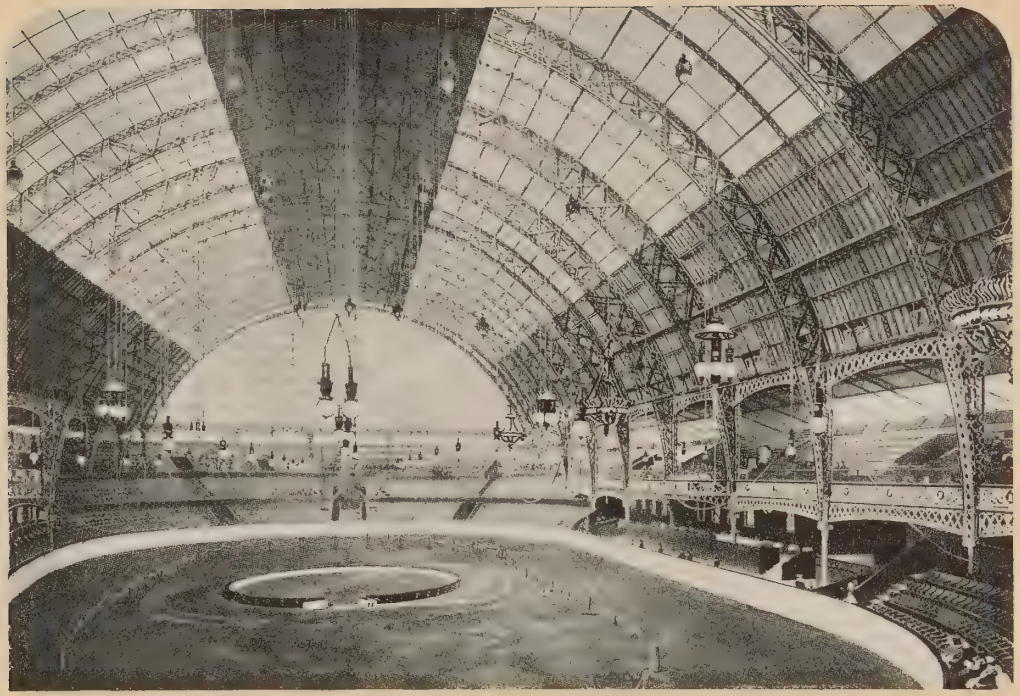
Engineer—Sir GEORGE BERKLEY, M. Inst. C.E., London.

## Natal Government Railways.

Span - - - 105 feet.

## Durban Station.

Length of Station - - 214 feet.
Weight of Metalwork - 226 tons.



Architects—J. & J. S. Edmeston, Esqrs.,
H. E. Coe, Esq.

Engineers—M. Am Ende, Esq., M. Inst. C.E.
A. T. Walmisley, Esq., M. Inst. C.E.

## Olympia.

Galleries 40 feet wide.

| | |
|---|---|
| Total width | 250 feet. |
| Length of Hall | 440 feet. |

## London.

| | |
|---|---|
| Central Span | 179 feet. |
| Height | 120 feet. |
| Total weight | 1,110 tons. |

Engineers—Richard Johnson, M. Inst. C.E., Andrew Johnston, M. Inst. C.E., Charles Sacré, M. Inst. C.E.

## The Central Station.

For the G.N., Midland, and G.C.
Railway Companies.
(Cheshire Lines Committee.)

## Manchester.

| | | | | |
|---|---|---|---|---|
| Span | - | - | - | 210 feet. |
| Length | - | - | - | 550 feet. |
| Weight | - | - | - | 2,400 tons. |

Engineer—JOHN WILSON, Esq., M. Inst. C.E., London.

## Great Eastern Railway.

Cast Iron - - - 330 tons.

## Liverpool Street Station, London.

Wrought Iron - - 1,170 tons.

Engineer in Chief—W. H. Gates, Esq., C.E., London.

Neasden Engine Shed.

Metropolitan Railway.

Diameter - - 145 feet.

Weight - - 180 tons.

Leeds Forge Co., Leeds.

Two Bays, each 40 feet span.
Height, 24 feet 6 ins. to eaves.

New Flanging Shop.

Weight - - - 157 tons.
Total length - - 320 feet.

Engineer R. M. ORDISH.

## The Royal Drill Hall.

## Derby.

| | | | |
|---|---|---|---|
| Length | - | - | 150 feet. |
| Span | - | - | 75 feet. |

1st V.B. Sherwood Foresters (Notts. and Derbyshire Regiment).

Weight - - 72 tons.

Engineers—Messrs. Livesey, Son, & Henderson, London.

## Buenos Ayres Western Rly.

Length - - - - 687 feet.
Span - - - - 124 feet.

## Station at Once.

Weight - - - - 926 tons.

# Buildings.

Architects -Messrs. A. Waterhouse & Son, London.

## Hotel Metropole.

## Brighton.

| | |
|---|---|
| Height - - - | 150 feet. |
| Frontage - - | 200 feet. |
| Steelwork - - | 1,745 tons. |
| Area - - - | 3,900 sq. yds. |

## Hotel Metropole.

Northumberland Avenue,
London.

| | |
|---|---|
| Height - - - | 140 feet. |
| Frontage - - | 300 feet. |

| | |
|---|---|
| Steelwork - - | 907 tons. |
| Area - - - | 4,470 sq. yds. |

## Savoy Hotel,
Victoria Embankment.

| | | |
|---|---|---|
| Height | - - | 130 feet. |
| Frontage | - - | 195 feet. |

## Near Charing Cross,
London.

| | | |
|---|---|---|
| Steelwork | - - - | 1,094 tons. |
| Area | - - - | 4,000 sq. yds. |

Architect—Col. R. W. Edis, F.S.A., London.

## Hotel Great Central.

## Marylebone, London.

| | | | |
|---|---|---|---|
| Height | - - - | 140 feet. | |
| Frontage | - - - | 220 feet. | |
| Steelwork | - - - | 966 tons. | |
| Area occupied | - - | 6,600 sq. yds. | |

Architect—G. D. Martin, Esq.

## Hotel Majestic.

## Harrogate.

| | | | |
|---|---|---|---|
| Height | - - - | 117 feet. | |
| Frontage | - - - | 240 feet. | |
| Steelwork | - - - | 850 tons. | |
| Area | - - - | 3,500 sq. yds. | |

Architects—Messrs. READE & REILLY, London.

## Metropolitan Tabernacle.

Length - - - 130 feet.
Width - - - 82 feet 6 inches.

## Newington Causeway, London.

Height - - - 90 feet 6 ins.
Ironwork - - - 240 tons.

Architects—Messrs. A. Waterhouse & Son, London.

## Prudential Assurance New Buildings.

Weight - - 1,537 tons.

## Holborn Bars, London.

Area - - 7,330 super. yards.

# Fractures.

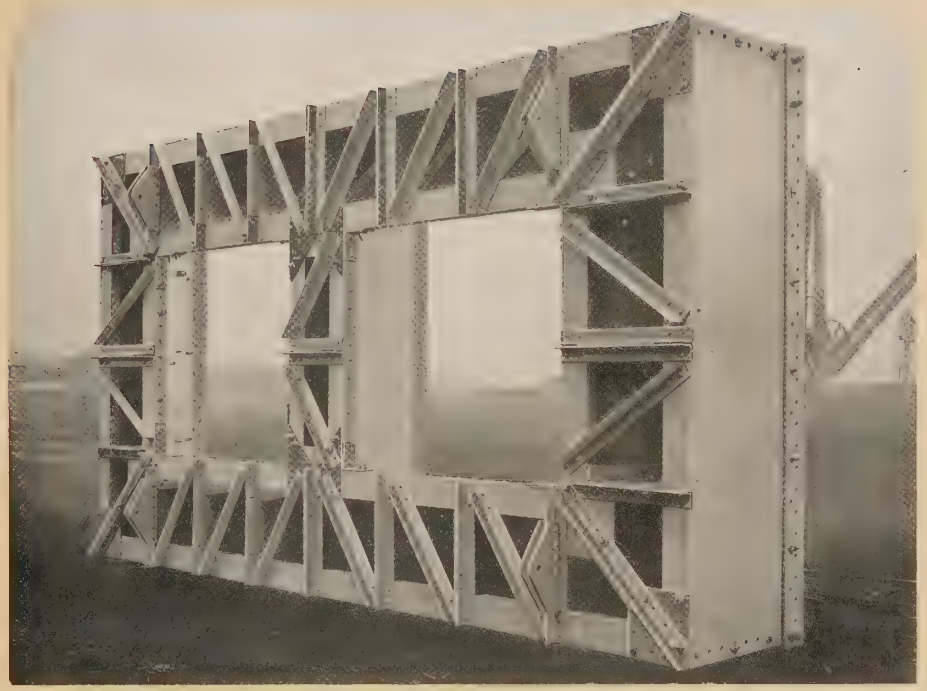
Architects—Messrs. MAXWELL & TUKE, Manchester.

## Steel Tower.

| | | | |
|---|---|---|---|
| Total height | - | - | 574 feet. |
| Width at base | - | - | 143 feet. |

## New Brighton, nr. Liverpool.

| | | | |
|---|---|---|---|
| Weight of Steelwork in Tower | - | | 1,760 tons. |
| Weight of Steelwork in Buildings | - | | 650 tons. |



Engineer -T. M. NEWELL, Esq., M. Inst. C.E., Dock Engineer, N.E. Rly., Hull.

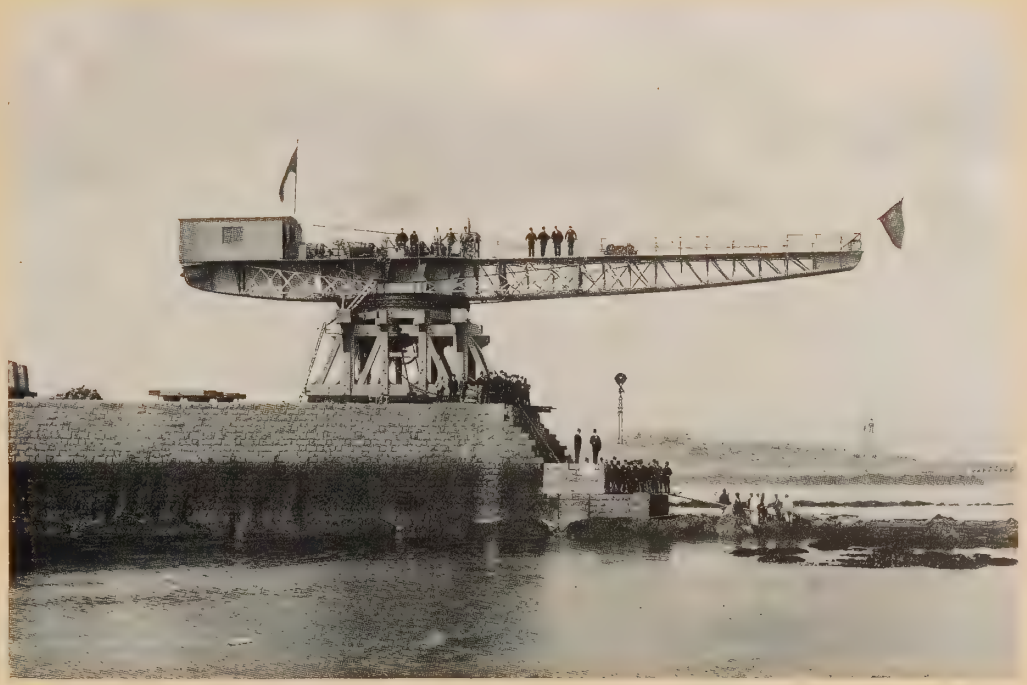
## Steel Monolith.

| | | |
|---|---|---|
| Length | - - | 20 feet 6 inches. |
| Breadth | - - | 11 feet 6 inches. |

## North Eastern Railway, Hull.

| | | |
|---|---|---|
| Height | - - | 3 feet 7 inches. |
| Weight | - - | 8½ tons. |

One of 42.



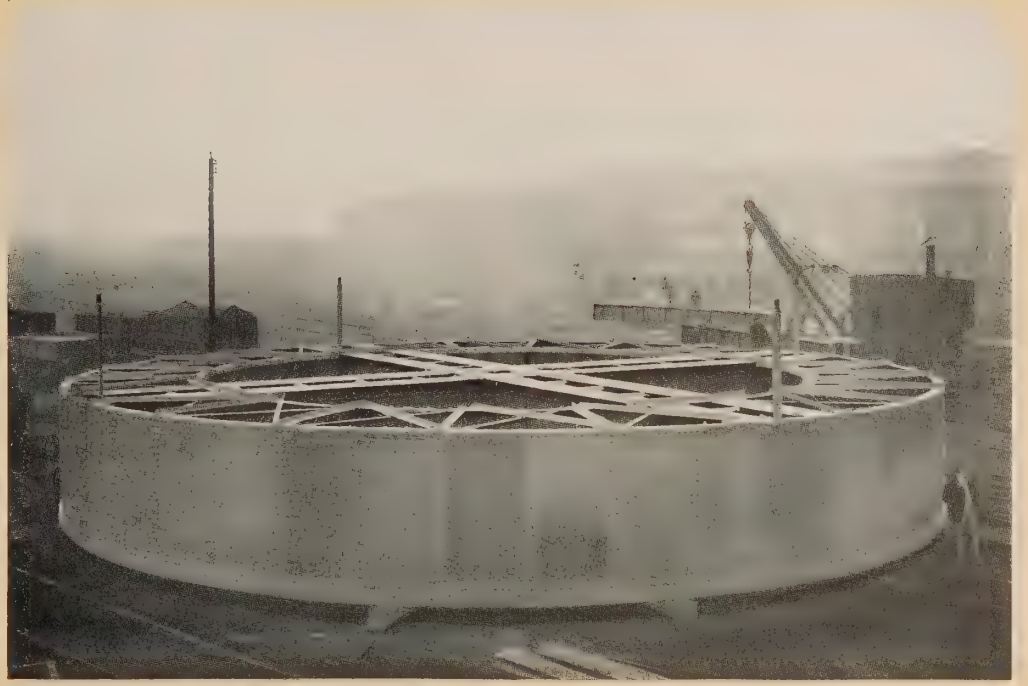
Engineer—H. H. WAKE, Esq., M. Inst. C.E., Sunderland.

## Steel Radial Crane.

Erected for the River Wear Commissioners.

## Sunderland.

| | | | |
|---|---|---|---|
| Length of Girders | - | - | 123 feet. |
| Weight of Steelwork | - | - | 58 tons. |



Engineer—J. A. McDonald, Esq., M.I.C.E., Midland Railway, Derby.

## Steel Monolith.

Diameter - - - 55 feet.
Depth - - - 8 feet.

## Heysham Harbour.

Weight - - - 77 tons.
Two Monoliths.

# Code.

## Incoming Messages.

| | | |
|---|---|---|
| **Price** | At what price and how soon can you furnish? | INVERCLYDE |
| | Wire me at herein address prices and delivery on | IVEAGH |
| | Write do. do. do. | KEANE |
| | Does price include ? | KELVIN |
| | Can you alter without extra cost to us ? | KENYON |
| | What will be the extra expense of ? | KER |
| **Delivery** | Wire quickest possible delivery | KESTEVEN |
| | Can you not shorten delivery ? | KINNAIRD |
| | Can you make better delivery ? | KINNEAR |
| | To be delivered not later than | KINTORE |
| | Can you let us have ? | LAMINGTON |
| **Shipment** | Have you shipped ? | LAURENCE |
| | When did you ship ? | LECONFIELD |
| | When will you ship ? | LEIGH |
| | Ship immediately | LILFORD |
| | Ship as soon as possible | LINGEN |
| | Ship immediately; material ready | LISMORE |
| | When and by what route did you ship? | LISTER |
| **Drawings** | Send tracing for | LOCH |
| | Send plan for | LOFTUS |
| | Send latest catalogue | LOVAINE |
| | Send immediately by mail | LURGAN |
| | do. do. passenger train | LYREDEN |
| | do. do. steamer | MALCOLM |
| **Order** | Enter our order and hold for shipping instructions | MASHAM |
| | Send at once what you can of our order | MEREDYTH |
| | Add to our order | MINSTER |
| | Cancel our order for | MOSLYN |
| | Cancel our order under date of | ORMONDE |
| | Order will be cancelled unless shipped by | OVERTOUN |
| | Change our last order to read | PIRBRIGHT |
| | Substitute the following for our order | POLTIMORE |
| | Hold subject to our order | RAGLAN |
| **General** | Can you furnish ? | RAMSAY |
| | Can you alter ? | RANFURLY |
| | Will you guarantee ? | RATHMORE |
| | Until you hear from us do nothing | RAYLEICH |
| | ——broken in transportation; replace immediately. | REVELSTOKE |

## Outgoing Messages.

| | | |
|---|---|---|
| **Price** | We are unable to modify our quotation | RIBBLESDALE |
| | Price includes parts mentioned | RODNEY |
| | Alterations will cost extra £ | ROMILLY |
| | Price does not include parts mentioned | RONALD |
| | Alterations will be made free of charge | ROOKWOOD |
| **Delivery** | Delivery named is the very best we can do | ROSMEAD |
| | Delivery f.o.b. | ROSSMORE |
| | Delivery c.i.j. | ROWTON |
| | Delivery j.o.t. | ROWLAND |
| **Shipment** | We can ship immediately | SALTFORD |
| | We can ship in about three days | SOMERHILL |
| | We can ship in about five days | SOMERLEY |
| | We can ship in about seven days | SOMERTON |
| | We can ship in about ten days | SOMPLING |
| | We can ship in about two weeks | STALBRIDGE |
| | We can ship in about three weeks | STANMORE |
| | We can ship in about four weeks | STRATHDEN |
| | We can ship in about five weeks | SUDLEY |
| | We can ship in about six weeks | SUNBURY |
| | We can ship in about ten weeks | TAGORE |
| | We can ship in about two months | TAKEMAR |
| | We can ship in about three months | TALBOT |
| | We can ship in about four months | TEMPLEMORE |
| | We can ship in about five months | TENNEL |
| | We cannot possibly ship sooner than | TENNET |
| | Shall we ship alone or hold for shipment with ? | TERNAN |
| **Guarantee** | We will guarantee purpose mentioned | TERNOS |
| | We cannot guarantee for mentioned | TEYNHAM |
| | We think suitable, but cannot guarantee | THRING |
| **Order** | Your order was shipped | THURLOW |
| | Your order will be shipped | TIANDO |
| | Instructions to cancel arrived too late | TIGHE |
| | If ordered at once | TILLARD |
| | If wanted you must order at once | TOBAGO |
| **General** | We can furnish | TORRY |
| | We can furnish specified for | TREDEGAR |
| | We are not prepared to furnish | TREEBY |
| | We do not understand what you mean | TREVOR |
| | Desired information in catalogue, page | TULBY |
| | Information too meagre to quote | TUSCAN |
| | Your telegram is unintelligible; please repeat | TWYNAM |

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